

The African Organisation for Standardisation

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ARS 846 (2012) (English): Food grade
cassava starch -- Specification



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Food grade cassava starch — Specification



Table of contents

1	Scope	1
2	Normative references	1
3	Definitions	2
4	Essential quality and compositional requirements	2
4.1	Sensory characteristics	2
4.2	Physical properties	3
4.3	Chemical properties	3
4.4	Compositional quality requirements	3
5	Food additives	3
6	Contaminants	3
6.1	Pesticide residues	3
6.2	Other contaminants	3
7	Hygiene	3
8	Packaging	4
9	Labelling	4
10	Methods of test	4
11	Criteria for conformity	4
	Bibliography	5

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Introduction

Starch is one of the most abundant substances in nature, and is a renewable and almost unlimited resource. Starch is produced from grain or root crops. It is mainly used as food, but is also readily converted chemically, physically, and biologically into many useful products. To date, starch is used to produce such diverse products as food, paper, textiles, adhesives, beverages, confectionery, pharmaceuticals, and building materials.

Cassava starch has many remarkable characteristics, including high paste viscosity, high paste clarity, and high freeze-thaw stability, which are advantageous to many industries.

Cassava starch is produced primarily by the wet milling of fresh cassava roots but it can also be produced from dry cassava chips.

The process of starch extraction from cassava is relatively simple because there are only small amounts of secondary substances, such as protein, in the roots. When cassava roots are harvested or selected for starch extraction, age and root quality are critical factors. Cassava roots need to be processed almost immediately after harvest, as the roots are highly perishable and enzymatic processes accelerate deterioration within one to two days. The food industry constitutes one of the largest consumers of starch and starch products. In addition, large quantities of starch are sold in the form of products sold in small packages for household use. The production of cassava starch has increased considerably in recent years.

Food grade cassava starch — Specification

1 Scope

This African Standard specifies the requirements and the methods of sampling and test for food grade cassava starch.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ARS 53, *General principles of food hygiene — Code of practice*

ARS 56, *Prepackaged foods — Labelling*

ARS 471, *Food grade salt — Specification*

WD-ARS 835:2012, *Fresh sweet cassava — Specification*

WD-ARS 839:2012, *Dried cassava chips — Specification*

CODEX Stan 192, *General standard for food additives*

CODEX STAN 193, *Codex general standard for contaminants and toxins in food and feed*

ISO 1666, *Starch — Determination of moisture content — Oven-drying method*

ISO 3960, *Animal and vegetable fats and oils — Determination of peroxide value — Iodometric (visual) endpoint determination*

ISO 4833, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of microorganisms — Colony-count technique at 30 degrees C*

ISO 5498, *Agricultural food products — Determination of crude fibre content — General method*

ISO 5809, *Starches and derived products — Determination of sulphated ash*

ISO 5810, *Starches and derived products — Determination of chloride content — Potentiometric method*

ISO 6579, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Salmonella spp.*

ISO 6888-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 1: Technique using Baird-Parker agar medium*

ISO 6888-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 2: Technique using rabbit plasma fibrinogen agar medium*

ISO 6888-3, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 3: Detection and MPN technique for low numbers*

ISO 7251, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of presumptive Escherichia coli — Most probable number technique*

ISO 10520, *Native starch — Determination of starch content — Ewers polarimetric method*

ISO 11212-1, *Starch and derived products — Heavy metals content — Part 1: Determination of arsenic content by atomic absorption spectrometry*

ISO 11212-2, *Starch and derived products — Heavy metals content — Part 2: Determination of mercury content by atomic absorption spectrometry*

ISO 11212-3, *Starch and derived products — Heavy metals content — Part 3: Determination of lead content by atomic absorption spectrometry with electrothermal atomization*

ISO 11212-4, *Starch and derived products — Heavy metals content — Part 4: Determination of cadmium content by atomic absorption spectrometry with electrothermal atomization*

ISO 21527-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 2: Colony count technique in products with water activity less than or equal to 0.95*

ISO 27107, *Animal and vegetable fats and oils — Determination of peroxide value — Potentiometric end-point determination*

3 Definitions

For the purpose of this standard the following definitions apply.

3.1

food grade cassava starch

white granular glucose polymer obtained by wet extraction process from mature cassava (*Manihot esculenta* Crantz) storage root or cassava chips or cassava flour

3.2

food grade material

material that is free from substances that are hazardous to human health and may be permitted to come in contact with food.

3.3

foreign matter

inorganic matter such as sand, glass, metal, stones, clay and mud and organic matter such as chaff, straw, weed seeds and insects or insects fragments, rodent hairs

4 Essential quality and compositional requirements

4.1 Sensory characteristics

Food grade cassava starch shall be

- a) white in colour,

NOTE Starch may be not white provided that it is characteristic of the raw material.

- b) tasteless, and

- c) odourless

- d) free from foreign matter

4.2 Physical properties

Not less than 95 % of mass of food grade cassava starch shall pass through a sieve of 100 – 140 µm (0.1 – 0.12 mm) mesh screen.

- a) The food grade cassava starch shall be insoluble in cold water and
- b) Food grade cassava starch shall be insoluble in 96 % ethanol.

4.3 Chemical properties

Food grade cassava starch shall give a blue-black colouration when tested with iodine.

4.4 Compositional quality requirements

Food grade cassava starch shall conform to the compositional quality requirements shown in Table 1.

Table 1 — Compositional requirements for edible cassava starch

Analytical characteristic	Requirement	Method of test
Total acidity, %, by mass, max.	1.0	AOAC
pH	5 - 7	ISO 1842
Cyanide content, mg/kg, max.	10.0	WD-ARS 844
Starch content, %, by mass, min.	95.0	ISO 10520
Moisture, % by mass, max	12.0	ISO 1666
Fibre, % by mass on dry weight basis, max.	0.2	ISO 5498
Sulphated ash, % by mass, max.	0.6	ISO 5809
Viscosity or pasting properties	33 – 34 cSTM	
Acid insoluble ash, % m/m max	0.2	ISO 5985
Chloride, %, by mass, max.	0.64	ISO 5810
NOTE Every other starch which does not conform to this table is classified as industrial starch.		

5 Food additives

Food-grade cassava starch may contain a maximum of 0.2 % ascorbic acid as colour improver and other additives in accordance with CODEX Stan 192.

6 Contaminants

6.1 Pesticide residues

Food grade cassava starch shall conform to maximum residue limits for pesticide residues established by the Codex Alimentarius Commission for this commodity.

6.2 Other contaminants

Food grade cassava starch shall comply with the maximum levels of the Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193).

7 Hygiene

Food grade cassava starch shall be prepared and handled in a hygienic manner in accordance with ARS 53 and shall conform to microbiological limits specified in Table 2.

Table 2 — Microbiological limits for food grade cassava starch

Micro-organism(s)	Requirements	Method of test
Total viable count, CFU per gram, max	10^4	ISO 4833
<i>Escherichia coli</i> , CFU per 10 grams	Shall be absent	ISO 7251
Salmonella	Shall be absent	ISO 6579
Yeasts and moulds, CFU per gram, max	10^3	ISO 21527-2

8 Packaging

8.1 Food grade cassava starch shall be packaged in food grade material which will safeguard the hygienic, nutritional, and organoleptic qualities of the product.

8.2 The net weight of the packages for food grade cassava starch may be required to meet the relevant regulations of the destination country.

9 Labelling

9.1 In addition to the requirements of ARS 56, the following specific labelling requirements shall apply and shall be **legibly** and **indelibly** marked:

- common name of the product 'Food grade cassava starch';
- name, and physical address of the manufacturer/ distributor and /or trade name/ brand name;
- date of manufacture;
- the statement "Human Food" shall appear on the package;
- lot identification;
- expiry date;
- country of origin;
- the net weight in metric units;
- storage conditions as "store in a cool dry place away from contaminants";
- instructions on disposal of used package.

9.2 When labelling non-retail packages, information for non-retail packages shall either be given on the packages or in accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer or packer shall appear on the packages.

10 Methods of test

The product covered by this standard shall be tested in accordance with the methods of test indicated in the relevant clauses of this standard.

11 Criteria for conformity

A lot shall be declared as conforming to this standard if samples inspected or analysed for quality requirements conform to the provisions of this standard.

Bibliography

East African Standard, EAS 742:2010, *Food grade cassava starch — Specification*

Nigerian Industrial Standard, NIS 386:2004, *Standard for cassava starch (food and industrial grade)*

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